



2. SAFETY

INTRODUCTION

Safety is one of the top priorities members of the public identified for the transportation system through the Destino 2045 visioning workshops. The safety analysis for Destino 2045 primarily consists of technical analysis focused on vehicular crash characteristics and trends over a five-year period—2011 to 2015. TxDOT’s Crash Records Information System (CRIS) and NMDOT’s Statewide Traffic Records System (STRS) provided the data for the analysis of the regional crash trends and identification of location-specific crash hotspots.

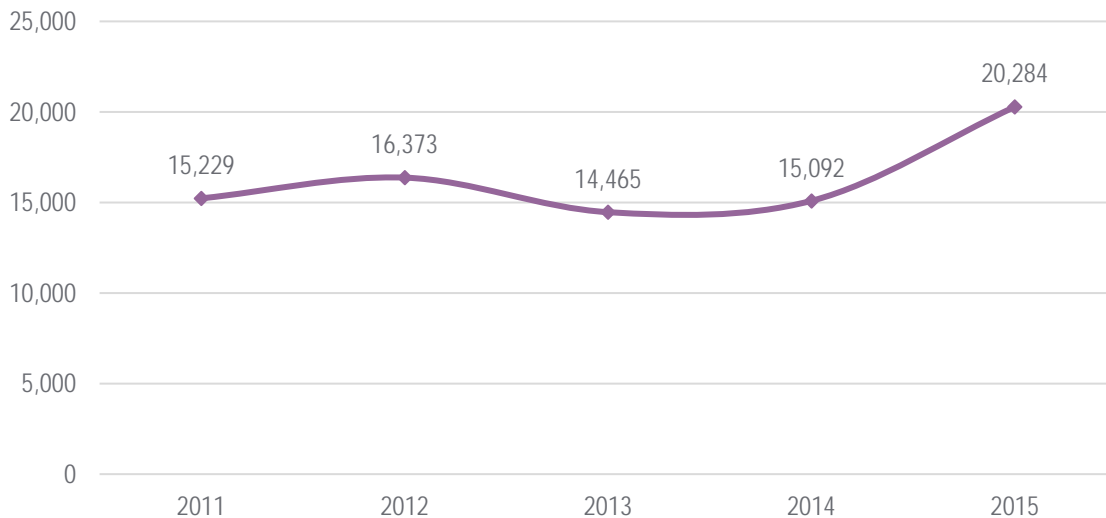
REGIONAL CRASH TRENDS

The summaries and figures in this section provide an understanding of the recent regional crash trends in the El Paso MPO region, including total crashes regionwide, total crashes per capita, crash rate based on roadway usage, crashes by severity, crashes involving pedestrians and/or bicyclists, and rear-end crashes.

TOTAL CRASHES REGIONWIDE

Between 2011 and 2015, a total of 81,443 crashes occurred in the Destino 2045 study area. Though the annual number of crashes has fluctuated slightly over the five-year period, the biggest spike in crashes occurred most recently in 2015. In fact, the region experienced roughly a 34% increase in crashes between 2014 and 2015, pushing the annual crash total over 20,000. Figure 2.1 shows the annual number of crashes in the regions between 2011 and 2015.

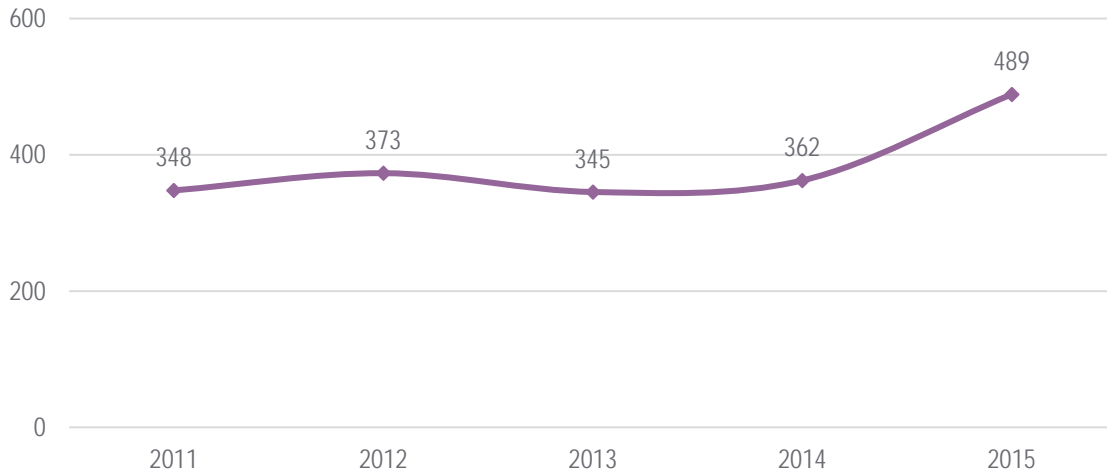
FIGURE 2.1: REGIONAL CRASH TOTALS BY YEAR; 2011-2015



The crash rate is an important metric as it represents the amount of crashes relative to how much travel is occurring in the region. When considering roadway usage (i.e. VMT), crash rate trends over the period remain similar—minor fluctuations between 2011 and 2014 and a more significant increase in 2015. Since there is relatively little change in VMT between years, the trends reveal that crashes do not necessarily correlate directly with the amount of travel (i.e. VMT), which also speaks to the randomness and unpredictability of crashes from year to year. Annual VMT for the period was estimated using extrapolated daily VMT data from the TTI Urban Mobility Scorecard. Figure 2.2 shows the crashes per 100 million vehicle miles traveled for the region between 2011 and 2015.



FIGURE 2.2: REGIONAL CRASHES PER 100 MILLION VMT BY YEAR; 2011-2015



CRASHES BY SEVERITY

Crash severity is perhaps the most important factor to consider when evaluating safety, as crashes that result in injury or death represent the worst consequences related to roadway safety. Destino 2045 classifies crashes into four crash result categories: no injury, non-incapacitating injury, incapacitating (serious) injury, and fatality. Table 2.1 shows the number of crashes by result category, as well as the percentage relative to the total number of regional crashes. Crash data shows that nearly 28% of crashes in the region result in some kind of injury, and about 1 out of every 237 crashes results in a fatality.

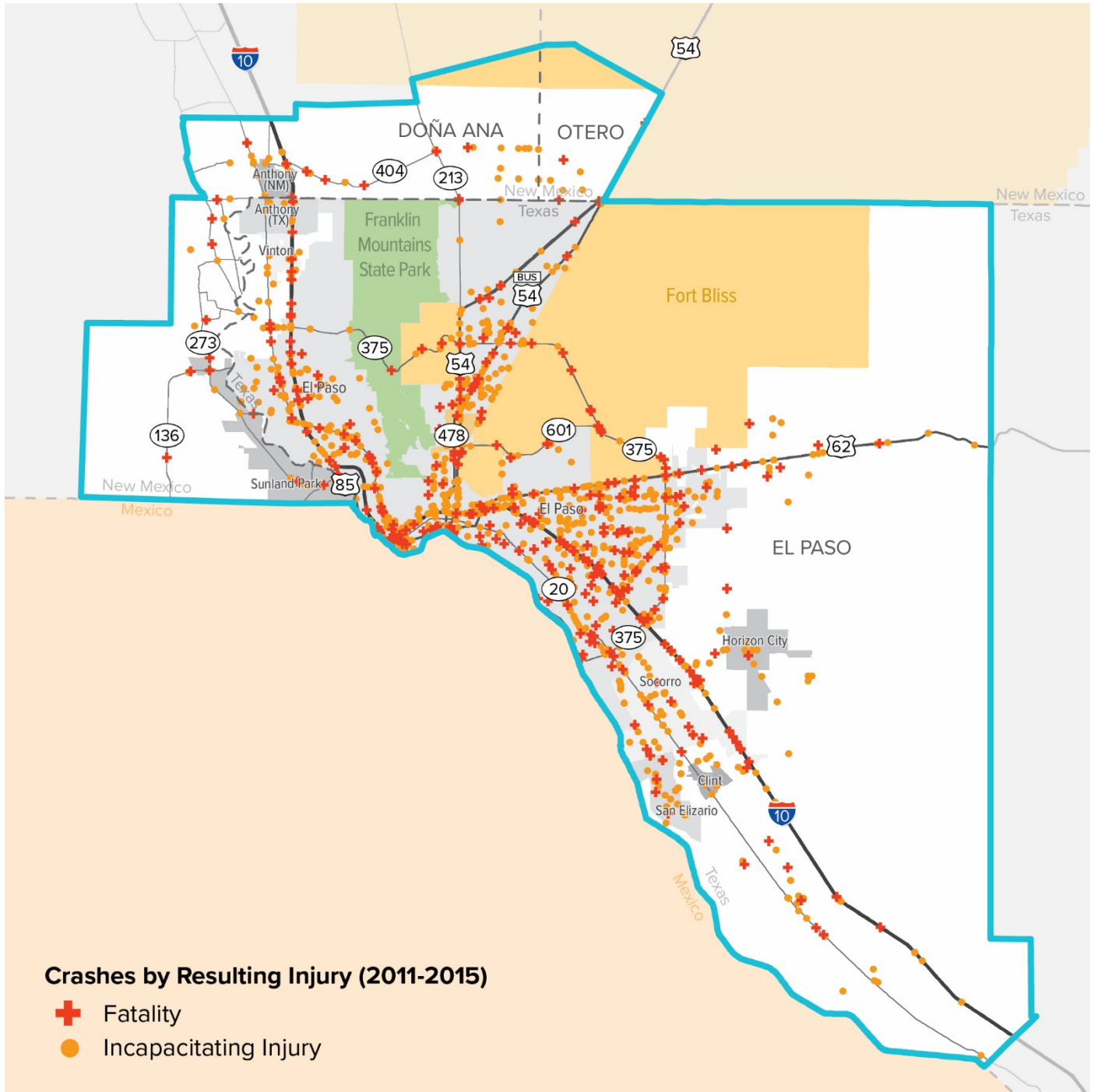
Though the region experienced the highest total number of crashes in 2015 (20,284) compared to the other four years in the period, this year also had the highest number of crashes resulting in no injury (15,125) and the lowest number of crashes resulting in fatality (59). However, comparing the likelihood of a crash-related fatality between the MPO region and the state of Texas for 2015, the estimated number of fatalities per 100 million VMT is 1.52 and 1.39 comparatively, indicating that crashes in the region typically have more severe consequences compared to the rest of the State. Figure 2.3 shows the location of all crashes resulting in fatality or incapacitating injury between 2011 and 2015.

TABLE 2.1: REGIONAL CRASHES BY SEVERITY; 2011-2015

SEVERITY	CRASHES	PERCENT
Fatality	344	0.42%
Incapacitating injury	1,126	1.38%
Non-incapacitating injury	21,149	25.97%
No injury	59,313	72.83%
Total Crashes	81,443	100%



FIGURE 2.3: REGIONAL CRASHES BY RESULTING INJURY; 2011-2015





CRASHES INVOLVING PEDESTRIANS OR BICYCLISTS

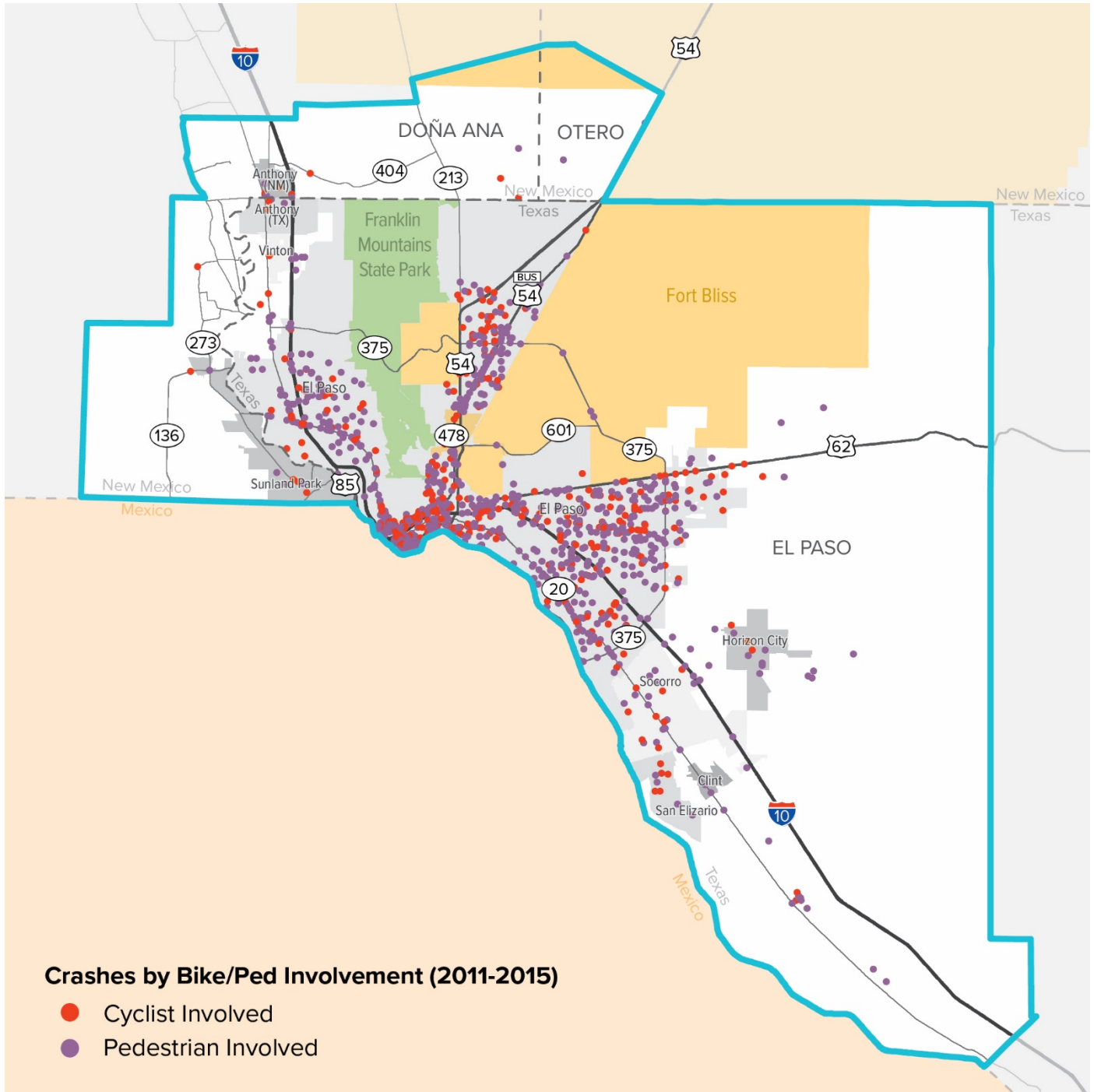
A total of 1,536 crashes during the five-year period involved pedestrians or cyclists, which is 1.89% of the total number of crashes for the region. Table 2.2 shows the total and percentage of crashes involving pedestrians or cyclists. Looking at crash severity, 88 of the crashes that involved pedestrians or cyclists resulted in a fatality. In other words, 5% of crashes involving a pedestrian or cyclist resulted in a fatality, while less than 0.5% of crashes involving vehicles resulted in fatalities, which underscores the disproportionate safety threats facing cyclists and pedestrians on the transportation system. Figure 2.4 shows the location of crashes involving cyclists and pedestrians throughout the region between 2011 and 2015.

TABLE 2.2: REGIONAL CRASHES INVOLVING PEDESTRIANS OR BICYCLISTS; 2011-2015

CRASH TYPE	CRASHES	PERCENT OF CRASHES INVOLVING PEDESTRIANS OR BICYCLES	PERCENT OF TOTAL 5-YEAR CRASHES
Involving pedestrians	1,142	74.35%	1.40%
Involving cyclists	394	25.65%	0.48%
Involving either pedestrians or cyclists	1,536	100%	1.89%



FIGURE 2.4: REGIONAL CRASHES INVOLVING CYCLISTS AND PEDESTRIANS; 2011-2015





CRASH HOTSPOTS

Destino 2045 identified crash hotspots within the region through spatial analysis of intersections and roadway segments that experience the highest number of crashes. Total crashes, crashes involving pedestrians, crashes involving cyclists, and crashes resulting in serious injury or death are all considered in this analysis. Figure 2.5 shows congestion hotspots identified through geolocation of the collected crash data.

TOP CRASH INTERSECTIONS

Destino 2045 employed the TDM network and intersection points along the network to conduct proximity analysis that associated intersection crashes to the nearest intersection. Texas crash data was filtered using attributes provided in the dataset that flagged crashes occurring at intersections. New Mexico crash data did not include this information, so only crashes that were within 150 feet of an intersection were included in the analysis. Once the crash data was narrowed down, the number of crashes for each intersection was calculated by assigning each crash to its closest intersection. The below sections list and summarize the intersections that experienced the most crashes between 2011 and 2015.

Total Crashes

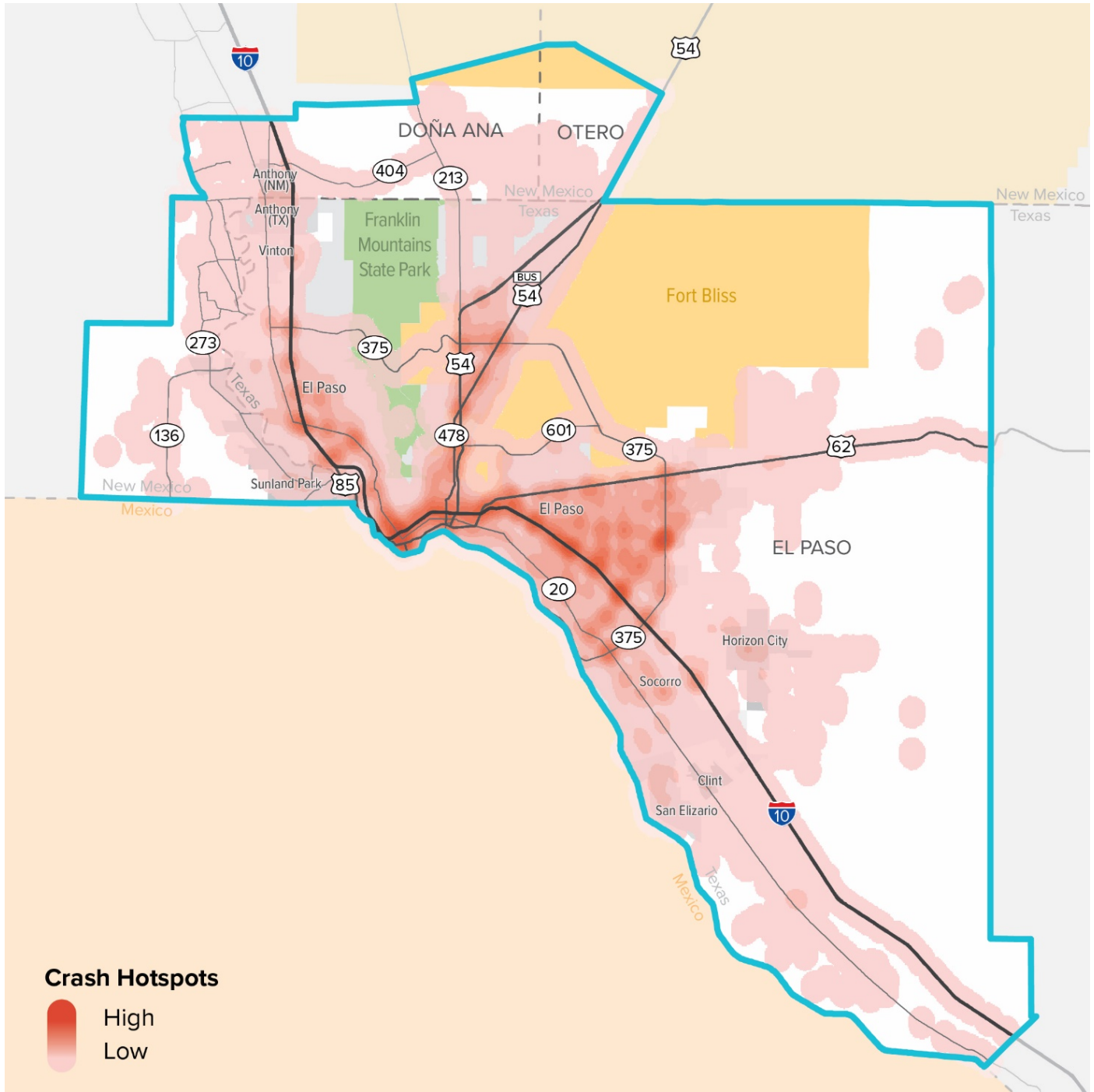
Seven of the top ten intersections with the highest total crashes are located along IH 10/Gateway Boulevard. Two of the top ten intersections are located on Loop 375, and one is located on US 54/Patriot Freeway. The intersection of IH 10/Gateway Blvd. W. at Sumac Dr. topped the list with the highest total number of crashes (196) between 2011 and 2015. Table 2.3 shows the number of crashes experienced at the highest crash intersections in the region.

TABLE 2.3: TOP TEN CRASH INTERSECTIONS; 2011-2015

INTERSECTION	CRASH COUNT	RANK
IH 10/Gateway Blvd. W. at Sumac Dr.	196	1
IH 10/Gateway Blvd. W. at George Dieter Dr.	179	2
IH 10/Gateway Blvd. W. at McRae Blvd.	139	3
IH 10/Gateway Blvd. E. at Hawkins Blvd.	134	4
Loop 375/Woodrow Bean Transmountain Dr. W. at Dyer St.	130	5
Loop 375/Joe Battle Blvd. S. at Rojas Dr.	129	6
US 54/Patriot Frwy./Gateway Blvd. S. at Sean Haggerty Dr.	126	7
IH 10/Gateway Blvd. W. at Lee Trevino Dr.	116	8
IH 10/Gateway Blvd. W. at Geronimo Dr.	112	9
IH 10/Gateway Blvd. W. at N. Yarbrough Dr.	103	10



FIGURE 2.5: REGIONAL CRASH HOTSPOTS; 2011-2015





Crashes Involving Pedestrians

Many of the intersections reported the same number of crashes involving pedestrians. However, six intersections stood out as having more occurrences of this type of crash. Two of the six intersections are located along US-62/US-85/Paisano Dr. and two are located on Oregon St. The intersections of E. San Antonio Ave. at N./S. Oregon St. and E. Paisano Dr. at S. Oregon St. experience the most pedestrian-involved crashes, each with five over the five-year period.

Crashes Involving Bicyclists

The number of reported crashes involving cyclists at intersections is relatively low, with only four intersections experiencing more than one crash of this type between 2011 and 2015. These four intersections include:

- Pershing Dr. at N. Piedras St.
- Rushing Rd. at Woodrow Bean Transmountain Dr. eastbound frontage road
- N. Lee Trevino Dr. at Edgemere Blvd.
- US-85/W. Paisano Dr. at Ruhlen Ct.

Crashes Resulting in Serious Injury or Fatality

For intersections where crashes resulting in serious injury or fatality occurred over the time period, two of the intersections are located along Loop 478 (Dyer Street), two more are located on Pete Domenici Memorial Hwy./Artcraft Rd./Loop 136/Loop 178, and two others are located on Loop 273/McNutt Rd. The intersection of Loop 136/Pete Domenici Memorial Hwy. eastbound at Loop 273/McNutt Rd. experienced seven crashes involving serious injury or fatality over the five-year period, which is the highest amount of this type of crash for all intersections.

TOP CRASH ROADWAY SEGMENTS

To identify the roadway segments with the highest crash counts in the study area, Destino 2045 utilizes the same proximity analysis used for the intersection hotspots applied instead to the roadway segments in the study area. Intersection crashes were excluded from this analysis. The analysis first determines a 150-foot buffer around El Paso TDM network segments. The next step is to assign any crashes within the buffer to a segment, indicating that the crash likely occurred along that particular portion of the roadway. The result of this analysis is a list of top roadway segments in the region with potential safety issues (i.e. road segments that experienced the highest number of crashes between 2011 and 2015).

Total Crashes

Seven of the top eleven high-crash segments are along IH 10, indicating not only the high degree of traffic flowing along the freeway, but also the increased safety concerns generated by high-speed roadway facilities. Two other high-crash segments are located on Loop 375, one is located on SH 20/N. Mesa St., and another is located on N. Zaragoza Rd./George Dieter Dr. The roadway segment of IH 10 southeast-bound main lanes from Adabel Dr. to Henry Brennan Dr. topped the list with 451 crashes between 2011-2015.



Table 2.4 describes the roadway segments that experience the largest number of crashes and provides a total number of crashes that occurred during the five-year time period.

TABLE 2.4: TOP ELEVEN CRASH ROADWAY SEGMENTS; 2011-2015

SEGMENT DESCRIPTION	CRASH COUNT	RANK
IH 10 S.E. main lanes from Adabel Dr. to Henry Brennan Dr.	451	1
Loop 375 N. from Laila H. Ln. to Tree Quail Ct.	439	2
IH 10 N.E. main lanes from Remcon Cir. to S. end of Torres St.	301	3
375 Loop W. from Pan American Dr. to Roseway Dr./UPAC RR	274	4
IH 10 N.E. main lanes from Kaiser Dr. to halfway between N. Lee Trevino Dr. and Albert Saab Dr.	263	5
IH 10 W. main lanes from Magruder St. to Bassett Townhomes	257	6
IH 10 S.E. main lanes from Albert Saab Dr. to Adabel Dr.	233	7
IH 10 S.E. main lanes from Venado Dr. to Lafayette Dr.	216	8
IH 10 S.E. main lanes from Kingman Dr. to Caper St.	211	9
SH-20/N. Mesa St. from halfway between Doniphan Dr. and Lynch Ln. to Crossroads Dr.	208	10
N. Zaragoza Rd./George Dieter Dr. between the main lanes of IH 10	208	10

Crashes Involving Pedestrians

Focusing on roadway segments with relatively high counts of crashes involving pedestrians, two of the top segments are along Dyer St., two are along Alameda Ave., and two are located on N. Mesa St. The roadway segment that experienced the highest number of crashes involving pedestrians is Dyer St. from Broadus Ave. to between Keltern Ave. and Fred Wilson Ave. with 9 crashes between 2011 and 2015. All three of these streets are TxDOT facilities operating within the urban core of El Paso, which tend to have higher concentrations of trips taken on foot, which highlights the context-sensitive nature of safety needs depending on the different types of built environments throughout the region.

Crashes Involving Bicyclists

Analysis of crashes involving cyclists revealed that there are few segments with more than one crash of this type. The following road segments are the only segments that experienced more than one crash involving a cyclist, with a total of two each between 2011 and 2015:

- S. El Paso St. from US-85/Paisano Dr. to 130 feet north of US-85/Paisano Dr.
- Alameda Ave. from Landon Way to Finita Ln.
- US-180/US-62/Montana Ave. westbound main lanes from Texas Star St. to between Leticia St. and Loop 375/Joe Battle Blvd.

Crashes Resulting in Serious Injury or Fatality

Of the top thirteen roadway segments with the highest total number of crashes resulting in serious injury or fatality, ten are located along IH 10, and the remaining three are located on Loop 273/McNutt Rd., Dyer St., and Alameda Ave., all of which appeared in at



least one of the other hotspots lists for roadway segments and intersections. The segment of IH 10 from Fabens Rd. to O. T. Smith Rd. topped the list with nine crashes resulting in serious injury or fatality over the five-year period.

CONCLUSION

The primary takeaways from the Destino 2045 safety analysis for the El Paso MPO region include:

- Crash trends between 2011 and 2015 indicate a fluctuating rise in total number of crashes, with a sharp increase in 2015. The increase in the number of crashes does not necessarily correlate with increases in VMT, which highlights how unpredictable crashes can be from year to year.
- Most crashes in the region result in no injury or a non-incapacitating injury. However, when compared to the rest of the state, crashes occurring in the MPO study area are more likely to result in fatality.
- The region experiences nearly three times as many reported crashes involving pedestrians than crashes involving cyclists.
- IH 10 appears the most frequently on hotspot lists with high crash concentrations for both intersections and roadway segments. A handful of other major roadways in the region also appear on multiple crash hotspot lists for both intersections and roadway segments, including:
 - > US-85/Paisano Dr.
 - > US-62
 - > Loop 375
 - > Loop 273/McNutt Rd.
 - > SH-20/Mesa St.
 - > Alameda Ave.
 - > Oregon St.
 - > Dyer St.

Few MPOs – including the El Paso MPO – possess the technical tools necessary to predict crashes along the transportation system in 2045, so the safety needs assessment does not include an assumption of where crashes are more likely to occur on the future transportation network. However, the analysis of observed crash hotspots and overall safety trends will help the MPO prioritize projects in Destino 2045 that include safety enhancements and are located near high-crash locations. This information will also help the MPO's planning partners identify factors that contribute to crash prevalence and severity (including speed, lack of pedestrian and bicycle facilities, and geometric design issues) that can be used to inform future planning efforts and project identification not included within the scope of the Destino 2045 MTP.